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IN THE

Supreme Court of the United States

METRO-GOLDWYN MAYER STUDIOS, INC., *et al.*,
Petitioners,

v.

GROKSTER LTD., *et al.*,
Respondents.

On Writ of Certiorari to the United States Court of Appeals for the Ninth Circuit

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BRIEF *AMICI CURIAE* OF INNOVATION SCHOLARS AND ECONOMISTS IN SUPPORT OF AFFIRMANCE

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INTEREST OF *AMICI CURIAE*

Amici Curiae are innovation scholars and economists who not only study, but also have been directly involved in actual creation of innovation technologies.[1] They urge this Court to re-affirm, unadulterated, the continued vitality of the principles announced in *Sony Corp. v. Universal City Studios, Inc.*, 464 U.S. 417, 442 (1984) ("*Sony*"). *Amici* believe the *Sony* principle is essential to maintain the vigor of technological innovation and creative expression, two wellsprings of our Nation's high rates of productivity and economic growth. *Amici Curiae* include the following:

Curt Hessler is an Adjunct Professor of Law at the UCLA Law School (specializing in antitrust, intellectual property, and the law of digital information). He has served as CEO or senior executive in public and private media and information companies over a 20-year business career, including as a Director of Intertrust Technologies, Inc., a leading developer/licensor of patents of digital rights management technologies. Previously, Mr. Hessler was Assistant Secretary of the U.S. Treasury for Economic Policy.

Eric von Hippel is a Professor of Management of Technology and Head of the Technological Innovation and Entrepreneurship Group at the Massachusetts Institution of Technology Sloan School of Management. Professor von Hippel's work examines the sources and economics of innovation including the process of product and service development. Among numerous other publications, he is the author of *Democratizing Innovation* (MIT Press, 2005), which re-

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[1] Petitioners and Respondents have filed letters consenting to all amicus briefs. No party to this case authored any part of this brief. The Distributed Computing Industry Association is defraying the out of pocket cost of printing services for this brief, but no person or entity other than *amici* or their counsel has made any other monetary contribution to its preparation or submission.

ports on the latest work in the field. Professor von Hippel holds four patents relating to facsimile transmission.

James Bessen, Lecturer in Law at Boston University School of Law, ~~is both~~ an economist and technologist. He wrote one of the first desktop publishing programs and became CEO of a successful software company. Thereafter, he has researched and published on the economics of innovation and patents, and edits the Technological Innovation and Intellectual Property newsletter.

SUMMARY OF ARGUMENT

In *Sony*, this Court re-stated, in the copyright context, a sound and venerable principle of commerce. It held that merely supplying to market a neutral product, service, or technology that is capable of substantial lawful uses does not impose on the supplier "indirect liability" for unlawful acts by some users of the product or technology.

This principle wisely accommodates technology policy and copyright law to the broader purpose they are both meant to serve: promoting innovation and, in turn, the economic growth that innovation generates. Copyright law aims at the time-and-scope-limited protection of information content, not the protection of particular, technology-specific business models for exploiting that content. The success of a particular business model lies with the competitive marketplace, where its contours and challenges inevitably (and properly) are shaped by the relentless and unpredictable emergence of new technologies.

The wisdom of the *Sony* principle has been vindicated by subsequent experience. The technology under challenge in *Sony*, the home video recorder, became the platform for a major new revenue and profit stream from video rentals and sales. Likewise, under the *Sony* regime, the ensuing twenty years have witnessed unparalleled technological advances in our systems of communication and information exchange.

The technology challenged in the instant case, the exchange of information content over decentralized peer-to-peer ("PtP") architected networks, is a vitally important implementation of the same basic PtP design that has revolutionized modern networks of communication and information exchange. This technology is not, as Petitioners appear to imply, some minor or "rogue" service devised merely to evade copyright compliance by its users, nor one which could be redesigned to add a centralized hub without adverse consequence. A court order to degrade PtP file-sharing technology would mean a sharp detour back to now obsolete "client-server" or "hub choke point" network architectures, sacrificing all the technological advantages gained as PtP architecture evolved.

From the economics perspective, this case is just a replay of *Sony*, a generation later.

But Petitioners and *amici* supporting them are asking this Court to replace the *Sony* principle with a novel, expansive and amorphous regime of judicial regulation. Under this regime, federal trial courts would assess the worthiness of a neutral technology *de novo*, and wherever believed to be appropriate for the "optimal" enforcement of copyright in currently implemented business models, order the deformation or redesign of the technology to attempt to limit the amount of infringing uses. Each assessment would require the estimation, weighing and balancing of a panoply of fact-specific and highly speculative "factors." In actual practice, this regime would create immense and continuing uncertainty as to the legality of innovative products, and require complex litigations, if the innovator could afford the risks. Such a regime would impose a huge new "tax" of litigation expense and legal uncertainty on the development and supply of a vast range of new technologies, introducing a non-trivial drag on the Nation's economic growth.

Ironically, the proposed regime would do little or nothing to reduce the infringement at which it is aimed. Rather, the same sort of file sharing systems would remain available in the U.S. from overseas. As a result, a decision undermining *Sony* would not only be a classic example of bad facts (widespread infringement) making bad law (a flawed but broadly applicable economic regulatory scheme), it would also not cure the ill the Petitioners presently face.

The court-based regime also would usurp the traditional regulatory roles of Congress and its established agencies over technology and product development. Historically, Congress has demonstrated its ability to regulate new technologies in a finely-targeted and selective fashion. The courts, by contrast, lack the broad array of remedial schemes, economy-wide perspective, and democratic processes to make such cross-industry regulation.

Just as in the *Sony* case, the media industry here enjoys the opportunity to leverage the new technology at issue to create powerful new sources of revenue and profit. The media industries, in connection with technology industries, already are successfully wedding PtP-architecture networks with Digital Rights Management ("DRM") technologies to facilitate more efficient delivery of copyrighted information content to an immense new market over the Internet. The further development and maturation of these new business models, and their testing in the competitive marketplace, can proceed vigorously if this Court soundly reaffirms the bright-line *Sony* principle.[2]

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[2] *Amici* take no position as to whether or not a technology provider should be held secondarily liable as a consequence of conduct *independent* of the provision of a technology capable of substantial non-infringing uses.

ARGUMENT

I. PRESERVATION OF THE *SONY* RULE IS ESSENTIAL TO MAINTAIN THE NATION'S HIGH RATES OF TECHNOLOGICAL INNOVATION AND REAL ECONOMIC GROWTH.

A. The *Sony* Rule Appropriately Delimits The Reach Of The Copyright Monopoly As A Disruption To Technological Development.

The *Sony* principle—that a product need "merely be capable of substantial non-infringing uses" to avoid indirect liability for its development and distribution—strikes a wise, bright-line balance between technological progress and intellectual property rights. *Sony*, 464 U.S. at 442. It aims both policies at a common purpose: advancing innovation and the economic growth innovation generates.

Stated in simple terms, the goal is an overall expansion of the nation's economic pie. A rule that expands the reach of the copyright monopoly while limiting technological progress, or that freezes technological progress to preserve current copyright business models, would stunt total economic growth. It would preclude development of business models that slice the pie in a manner by which everyone can receive a larger slice.

The invention and development of new technologies, products and services long have been the prime source of growing the Nation's economy. Today, we transport people and goods faster and cheaper than in the Founders' era, not because our horses and stagecoaches are swifter, but because of the intervening invention and deployment of steamboats, trains, cars, and airplanes. We communicate and exchange information faster, farther, and for less, not by speaking louder or more articulately, but due to the advent of telegraphy, telephony, and—most recently—digital networks of PtP architectures, centered around the global Internet.

A key driver of the exceptional growth in American productivity is the information technology ("IT") and communications sector—industries that today comprise a major portion of the Nation's total productive activity.[3] IT innovation likewise has been a key driver of economic growth in other sectors of the economy. According to a recent statistical evaluation of the impact of digital technologies, "IT-producing industries are once again at the forefront of national economic growth and . . . industries and firms that have invested most heavily in IT equipment achieve faster productivity growth than those that do not."[4] *See generally* Christopher Gust & Jaime Marquez, *International Comparisons of Product Growth: Recent Developments*, BUSINESS ECONOMICS (July 2001) (tracing the remarkable acceleration of U.S. labor productivity in the mid 1990's to heavy investment in and the rapid adoption of information technologies and services.)

Innovation and economic progress are also the central object of U.S. intellectual property laws, which are authorized to "promote the Progress of Science and the useful Arts." U.S. Const. art. I, § 8, cl. 8. Construing copyright doctrines to slow or deform the progress of new technologies does not

[3] Output per labor hour in the IT and communications sectors in the U.S. exponentially outpaced productivity growth in the traditional manufacturing and retail sectors, such that these sectors comprised 14.7% ($2565.5 billion) of this nation's total private industry GDP. *See* U.S. Dept. of Labor, Bureau of Labor Statistics, *at* http://data.bls.gov/sgi-bin/suvey; BEA Industry Economic Accounts, Gross-Product-By-Industry Accounts (Dec. 20, 2004) *at* www.bea.gov/bea/industry. As a result of heavy IT investment, real U.S. Gross Domestic Product grew at an average compounded rate of 3.2% from 1995 through 2003, far surpassing the growth rate of comparable developed economies, *e.g.*, Japan (1.2%) and the EU (under 2.3%). *See* OECD Productivity Data Base, *available at* www.oecd.org/topicsstatsportal.

[4] *See* ECON. & STATISTICS ADMIN., U.S. DEPT. OF COMMERCE, DIGITAL ECONOMY 2003, 3 (2003), *at* https://www.esa.doc.gov/2003.cfm.

make economic sense. It has never been, and we respectfully submit it should not now become, the generalized goal of copyright law to protect the prevailing revenue/profit levels of particular, entrenched business models nor to micro-manage the ever-evolving technological innovation that inevitably threatens to displace them.

Thus, as the Court repeatedly has stated, "'[t]he sole interest of the United States and the primary object in conferring the [copyright] monopoly . . . lie in the general benefits derived by the public from the labors of authors. When technological change has rendered its literal terms ambiguous, the Copyright Act must be construed in light of this basic purpose.'" *Sony*, 464 U.S. at 432 (quoting *Fox Film Corp v. Doyal*, 286 U.S. 123, 127 (1932) and *Twentieth Century Music Corp. v. Aiken*, 422 U.S. 151, 156 (1975)).

Of particular significance in determining the reach of the copyright monopoly is the fact that creative content, unlike real estate, wrist watches, and automobiles, is a classic "public" or "non-rivalrous" good: everyone can simultaneously enjoy the same expressive information content, in multiple formats, without diminishing the enjoyment of any other consumer. In apportioning rights in such goods, the obvious objective of the Framers was to optimize economic welfare over time—creating a balance between the immediate economic welfare derived from exploitation of already existing expressive information content and the future welfare derived from incentives to create new content.

To expand the copyright monopoly through doctrines of indirect liability so as to micro-regulate, impede and distort the general dynamic mechanisms of technological progress would confound these objectives. As the *Sony* Court stated, "it seems extraordinary to suggest that the Copyright Act confers upon all copyright owners collectively . . . the exclusive right to distribute [VCRs] simply because they may be used to infringe copyrights. That, however, is the logical

implication of their claim." *Sony*, 464 U.S. at 441 n.21. How much *more* extraordinary is the suggestion that the Act confers rights to exclude *every* technology found not to have optimized the "cost efficiency" of protecting current revenue streams for copyrighted works. Copyright would become a vehicle for revenue-protecting entrenched models, rather than for providing an environment with generalized incentives for creating new content and exploiting the new ways to publish and deliver that content. Copyright would become a brake on, rather than one of the pistons of, the Nation's economic engine.

B. The Introduction Of Compelling Dual-Use Technologies Often Threatens Existing Copyright Business Models, But Is Essential To Economic Growth.

Very frequently, new technologies have a "dual-effect": they simultaneously are capable of substantial legitimate uses but also make exploitation of copyrighted works more difficult or costly for old business models. This was true of the printing press itself (the invention of which led to copyright as a legal concept). *See Sony*, 464 U.S. at 430. It was true of virtually all new technology products in the analog Electronic Age (from telegraphy and photography, through telephony, the phonograph, the motion picture, radio, broadcast and cable television, the copy machine, and the VCR). And it has been a marked feature of the vibrant new technologies of the Digital Age (the computer, the massive hard-drive, the scanner, and the cornucopia of new products and services emerging from the now dominant PtP architecture of modern networks of communication and information exchange—*e.g.*, the Internet, Virtual Private Networks, World Wide Web and websites, email and email-attached files, peer-to-peer file sharing, instant messaging, and Voice-Over-Internet-Protocol or "VOIP").

It is not unusual for copyright holders initially to pursue regulatory or judicial means to stop or impede the progress of the new technologies. Fortunately for the Nation's economic progress—and also for copyright holders—these efforts rarely have succeeded. Each of the new technologies described above has flourished, producing vast new streams of economic benefits through new business models and formats.

This was the exact situation in *Sony*. Copyright holders sought to fashion a concept of indirect infringement liability that effectively would ban or require redesign of VCRs. But as the district court recognized in *Sony*, "[c]opyright law, however, does not protect authors from change or new considerations in the marketing of their products. As the Supreme Court stated in *Teleprompter Corp. v. Columbia Broadcasting System, Inc.*: 'While securing compensation to the holders of copyright was an essential purpose of that Act, freezing existing economic arrangements for doing so was not.'" *Universal City Studios, Inc. v. Sony Corp. of America*, 480 F. Supp. 429, 452 (C.D. Cal. 1979). The VCR flourished, and the new business model it enabled, *i.e.*, the sale and rental of "home videos," has now almost doubled the revenues and profitability from the older business model of in-theater motion picture exhibition.[5]

As the VCR example itself demonstrates, technological progress, and the *Sony* rule that helps keep it vital, does not ultimately pit the technology industry against the media industry. It promotes the growth and vigor of both industries and of the nation's economy as a whole.

The *Sony* case is being re-played in the instant case, with decentralized PtP networking software assuming the VCR's

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[5] In 2003, DVD sales and rentals, respectively, generated revenue of $12.1 and $5.4 billion, versus $9.27 billion in movie box office revenues. Mike Snider, *DVD's Success Steals the Show*, USA Today online (Jan. 8, 2004).

role. But to avoid the compelling VCR analogy, Petitioners mistakenly imply that decentralized PtP information sharing is a recently invented "rogue" product, confected merely to evade copyright infringement liability. They assume that, in the interest of "cost efficiently" protecting copyright, courts may order this technology to be distorted or degraded to conform to a centralized, hub and choke point design to enable "filtering" of copyrighted content without adversely impacting "legitimate" technologies.[6]

As a matter of impact on the future economy, there simply is no truth to this assertion. In fact, decentralized PtP technologies for the direct exchange of information between and among disparate databases constitute a mainstream and respected implementation of PtP network architecture, as old as the Internet itself.[7] They serve many economically important current uses and hold the capacity for additional dramatic advances.

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[6] Music Publishers' Brief at 17. Petitioners apparently would have the Court believe that all PtP information exchange networks are mere variants of the Napster music service addressed in *A&M Records, Inc. v. Napster, Inc.*, 239 F.3d 1004 (9th Cir. 2001). But *Napster* involved a suboptimal PtP implementation, because it was designed to contain a hub choke point in the form of a central index of all network sharable files contained on Napster's servers. This centralized structure made the Napster network not scalable, causing it to shut down and reopen with multiple parallel networks at the same website. The court obligated the Napster service to purge from its indices files over which any third party chose to assert a copyright claim. Napster found this too burdensome to accomplish and shut down. By contrast, an optimal PtP network does *not* require users to pass through any such choke point index or central database to access sharable files.

[7] Nelson Minar & Marc Hedlund, *A Network of Peers: Peer to Peer Models Throughout the History of the Internet, in* PEER TO PEER: HARNESSING THE POWER OF DISRUPTIVE TECHNOLOGIES 3-15 (Andy Oram, ed., O'Reilly 2001).

As detailed in a recent analysis in the *Economist*,

> the widespread equation of P2P with piracy has obscured the fact that the same technology is also being constructively applied in all sorts of fields, from content distribution and internet-routed phone calls to distributed storage and search. Peer-to-peer technology is emerging as a powerful new approach to building large-scale computer systems, regardless of the entertainment industry's legal efforts.[8]

For example, the Internet Archive, a public, non-profit library, uses five different PtP networks to store and distribute its data based content, being unable otherwise to sustain the cost of bandwidth. *Id.* Skype, the leading innovator in VoIP telephony, relies on PtP systems to host its burgeoning communications. *Id.*

An ingenious new technology called BitTorrent has advanced the technology used by Respondents one step further. BitTorrent is a PtP system that breaks down a single file into subparts, allowing it to be downloaded and uploaded simultaneously, and dramatically faster, from "swarms" of multiple senders to multiple recipients. *See* www.bittorent.com. While decentralized PtP systems inherently are more scalable and frugal on bandwidth than centralized systems,[9] BitTorrent is far more efficient and especially fast at exchanging very large content files. Indeed, BitTorrent originally was invented (and continues to be utilized) for the lawful sharing and distribution of huge Linux operating systems and application program files among developers and licensed users.[10] BitTorrent's creator strongly disapproves of copyright infringement and designed BitTorrent to make identification of

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[8] *In Praise of P2P*, THE ECONOMIST, Dec. 2, 2004, at 35.

[9] Clive Thompson, *The BitTorrent Effect*, Wired Magazine, Jan. 2005.

[10] *Id.*

copyright infringers easy through markers left on files.[11] Nonetheless, substantial infringing uses are occurring—indeed, it is estimated that this single technology has—since the advent of this litigation—risen to some 35% of all use of the Internet.[12]

A judicially imposed regime that would require Respondents' technology, BitTorrent, and their inevitable technological progeny to impose a centralized, hub choke point to filter out infringing files would deface these technologies to destroy the intrinsic advantages of speed, frugality in consumption of bandwidth, and scalability. Such a regime effectively would outlaw many of the technological leaps that PtP technologies represent. The result would be a court-ordered detour out of the Internet age, contrary to the object of the intellectual property laws to advance the progress of arts and science for the general benefit of the public.

II. THE JUDICIAL REGULATORY REGIME PROPOSED BY PETITIONERS AND THEIR AMICI WOULD IMPOSE IMMENSE UNCERTAINTY AND LITIGATION COSTS ON TECHNOLOGICAL INNOVATION AND DEVELOPMENT—ALL WITHOUT SOLVING THE PETITIONERS' INFRINGEMENT PROBLEM.

In addition to disrupting the appropriate balance struck by *Sony* between copyright protection and technological progress, the regime advocated by Petitioners and certain of their *amici* would further hinder innovation by imposing a complex and fact-specific analysis of myriad factors to assess the "cost

[11] Bram Cohen, *Incentives Build Robustness in BitTorrent*, at 2, May 22, 2003 *at* http://bittorrent.com/bittorrentecon.pdf2 (discussing how trackers function).

[12] *See* Adam Pasick, *File-sharing Network Thrives Beneath the Radar*, Reuters (Nov. 4, 2004), *at* http://in.tech.yahoo.com/041103/137/2ho4i.html.

effectiveness" of redesigning technologies to attempt to reduce infringement.

Petitioners advocate an analysis that requires consideration of defendant's conduct and intent, the relative proportion of infringing and non-infringing uses, and judicial assessment of whether the technology could have been designed, at not "disproportionate" cost, to limit infringement without significantly impairing consumers' ability to make lawful uses. MGM Brief at 27-33 (citing *In Re: Aimster Copyright Litigation*, 334 F.3d 643, 653 (7th Cir. 2003)). Indeed, Petitioners argue *Sony* should *never* be available as a defense to secondary liability (either contributory *or* vicarious) where the technology could have been but was not designed to limit infringing uses.[13]

Petitioners' *amici* go even further in advocating case-by-case balancing tests. *Amici Curiae* Law Professors, Economics Professors, and Treatise Authors ("*Amici* Professors") contend the courts should, as part of a comprehensive economic analysis, conduct a cost/benefit comparison of each infringing and noninfringing use of a dual-use technology *and* assess whether the design of the technology can be "altered" to protect copyrights. *Amici* Professors Brief at 9-13. Similarly, *Amici Curiae* Kenneth J. Arrow et al. ("*Amici* Arrow") contend the courts should consider a technology provider's "*good faith* efforts toward identifying and implementing *plausible low cost* mechanisms that *might discourage* infringement" and the availability of "substitute" technologies to allow the same legitimate uses without infringing uses. *Amici* Arrow Brief at 10-13 (emphasis added).

[13] *Amici* are in accord with those who believe that a single standard for immunity under *Sony* should apply with equal force to both contributory and vicarious liability. *See Amici* Professors Brief at 7; *Amici* Menell/Nimmer Brief at 25; *In Re: Aimster Litig.*, 334 F. 3d at 654.

Amici Curiae Peter S. Menell, David Nimmer et al. ("*Amici* Menell/Nimmer") depart the furthest from *Sony*. Indeed, they heavily criticize *Sony*'s adoption of the bright-line rule from patent law, proposing in its place an eight-factor "comprehensive balancing" test, including, "as a starting point," consideration of:

- the ratio of actual and/or predicted infringing v. non-infringing uses of the technology;
- the cost and effectiveness of hypothetical redesign of the technology that might reduce infringing uses;
- the effectiveness and cost of any other technologies to copyright holders to prevent infringement;
- alternative business models that could allow the non-infringing uses to occur without the new technology;
- potential effectiveness of litigation strategies against direct infringement;
- the state of mind of the designer of the technology;
- the loss of utility to consumers by alteration of the product; and
- the extent to which the copyright holder was attempting to limit the market for competitive technologies.

Amici Menell/Nimmer Brief at 25-29. [14]

These various proposed new standards share two common themes: first, that technological progress since *Sony* somehow mandates abandonment of its bright-line rule; and second, that in balancing numerous factors, the court must assess the adequacy of the provider's efforts to design or modify the technology to prevent infringing uses. We know of no copyright decision that has *ever* imposed on the provider of a neutral technology an obligation to design that technology to optimize protection of copyright, nor otherwise to compromise its design and integrity in a manner that reduces its utility for lawful use. The proposed standard thus constitutes a radical departure from the principles set forth in *Sony*, not merely a minor "clarification" of that rule. Moreover, the proposed new standard hardly could be less efficient in practice.

[14] Strangely omitted from this list of factors is the single most important objective of the copyright law: to "promot[e] broad public availability of literature, music, and the other arts." *Sony*, 464 U.S. at 432. One would expect that any holistic analysis of the impact of a new technology would inquire into whether that infringement actually has any adverse impact on creativity.

A. Adoption Of The Proposed Standard Will Lead To Debilitating Uncertainty As To The Lawfulness of Innovation.

1. Without question, practical application of the amorphous, economic regulatory analysis proposed by Petitioners and their *amici* would be both highly uncertain and exhausting in any given case. These are fact intensive inquiries, rife with ambiguity both as to the factual finding to be reached as well as the weighing and balancing of the facts found. It would be extraordinarily difficult to predict the outcome for any rapidly-evolving technology.

Indeed, many of the individual factors or considerations proposed comprise extraordinarily difficult questions in and of themselves. For example, analysis of the cost, effectiveness, and practical feasibility of designing or modifying a technology to prevent infringement *alone* raises a whole host of questions:

- To what lengths must a technology provider go to anticipate in its design all the ways in which its technology might possibly be used to infringe copyrights?

- How much would the technology provider be expected to spend to modify or alter the architecture of its technology to limit infringing uses?
- Must these sums be spent if the limitations on infringement were only partly effective or were potentially avoidable?
- What if the proposed design to block infringement requires action on the part of the user (*e.g.*, an authentication process or loss or privacy) that is likely to discourage users from using the technology at all?

Other proposed factors present equally uncertain questions. For example, under what circumstances does it make sense to impose the cost and burden of maximizing copyright protection on technology providers, instead of copyright owners? Should Xerox be expected to modify its duplicating machines to prevent copying of any document displaying a © absent authorization by the copyright owner, since those machines could be programmed to recognize the © symbol? Should Adobe be expected likewise to modify Adobe Acrobat software? Should Microsoft be expected to deactivate the "print" function from its Internet Explorer browser absent an authorization on a webpage, since such web pages generally are subject to copyright?

2. This uncertainty is compounded by the fact that many of the proposed inquiries depend on rank speculation as to future events. For example, no one knows, at the time a technology is invented, exactly how it will be used, what impact it will have upon which markets, and what new technologies may evolve either in response or independently. Ability to innovate—and the crucial availability of capital to invest—will depend on guesswork.

The VCR again presents an excellent example. In the *Sony* trial court in 1979, the copyright holders contended primarily that they would be injured by widespread librarying of movies[15]—an injury that never materialized. By the time the *Sony* Court issued its ruling in 1984, the copyright holders predicted hundreds of millions of dollars in annual losses of advertising revenues as time-shifters skipped over commercials when replaying their recordings.[16] But this crippling loss of revenue never occurred.[17] Instead, the actual predominant use of the VCR became to enable the enormously profitable home video market.

The Apple iPod provides another example. When first introduced in late 2001, iPods were used almost exclusively for listening to music files transferred for free from an owner's CD or the Internet. In 2003, Apple launched iTunes, its music store for sale of authorized recordings to iPod users. Consumers now use iPods for a wide variety of other purposes such as listening to books on tape, distribution by universities of lectures and other information, and, over the last couple of months, time-shifted internet radio broadcasts (a practice popularly known as "podcasting"). Podcasting has been enabled by neutral software not authorized by Apple that allows iPod owners to "subscribe" to periodic delivery of microcasts by individual "bloggers" or DJs.[18] The podcasts

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[15] *Universal City Studios, Inc.*, 480 F. Supp. at 465-469.

[16] Indeed, the content owners in *Sony* sought reconsideration of this Court's decision, arguing that it was "inexcusably based on district court findings made five years ago when the VTR industry was merely in its infancy, even though these finding utterly fail to reflect the realities of today's marketplace." Respondents' Petition for Rehearing, No. 81-1687, at 1.

[17] From 1980-2000, after widespread introduction of the VCR, television advertising revenues increased 43% faster than from 1960-1980. *See* Media Trends Track: *Trends in GDP/Total Ad Volume/TV Ad Volume 1960-2003, available at* www.tvb.org/nav/build_frameset.asp?url+/rcentral/index.asp.

[18] For a description of these uses of the Apple iPod, *see generally* www.audible.com and www.wikipedia.org/wiki/podcasting; *see also Duke to Give Apple iPods to First Year Students for Educational Use,*

today are authorized broadcasts created precisely for downloading. *Id.* But, it certainly is possible that in the future, the unauthorized recording of Internet radio may overtake current uses—raising questions as to the "design" of podcasting software. For present purposes, none of these evolutions can be known in advance of the organic operation of the free market.

3. Moreover, the uncertainty of the standard being proposed here exists not only at the time the technology is invented, but continuously thereafter. The proposed new standard would require continuous monitoring and evaluation to determine whether changed circumstances required some different modification to "optimize" prevention of infringement. As just demonstrated for the VCR and the iPod, and as discussed above regarding BitTorrent (Part I.B, *supra*), facts relevant to each of the numerous proposed factors change over time. They may be very different five, two, or even one year from the time the technology was invented.

For example, a potential technology that could prevent infringement may be too experimental or expensive today but subsequently may be perfected or become affordable—to either the copyright holder or the distributor of the technology. Or expected uses may never materialize, may dissipate, or may change in ratio to each other. Because the various factors and calculus may well tip back or forth as technologies and uses evolve, the distributor is permanently exposed to litigation.

4. While the uncertainty of an adverse *outcome* in litigation can prevent legitimate products from coming to market, the mere threat of litigation *expense* will doom many more. The *average* cost of defending a copyright case recently was approximated at just under $1 million. AIPLA Report of the Economic Survey at 96 (Fetzer-Kraus, Inc., 2003). But these

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Duke News & Communications (July 19, 2004), *at* www.dukenews.duke.edu/news/ipods_0704.html.

are not average cases. They involve difficult questions more akin to antitrust cases, including market impact, consumer use, alternative distribution sources, and technological feasibility. The entertainment industry prosecutes vigorously. More than 30 companies combined as plaintiffs below. Similarly, 28 entertainment companies joined in suing ReplayTV over a digital version of the VCR that made it easier for consumers to skip commercials. *See Paramount Pictures Corp. v. Replay TV*, 298 F. Supp. 2d 921 (C.D. Cal. 2004). The costs of defending a new technology are thus enormous, and will destroy innovation that otherwise could be expected. Indeed, the mere pendency of litigation prevented ReplayTV from obtaining additional funding, thereby driving the company to bankruptcy.[19]

The chill on innovation will be greatest for small start-up companies which are frequently the boldest innovators. While Sony had resources to fight through trial in *Sony*, most new technology companies never could attempt to do so. The result is that any single large copyright holder with a willingness to sue would hold a practical veto over new technology.

The chill on innovation also stems from the inevitable effect that the proposed regime would have on technology users. Faced with second guessing about anti-infringement measures that could have been implemented, technologists will, of necessity, render their innovations less user-friendly, less malleable and therefore less open to user innovation and modification (such as podcasting). This hardening of the arteries of innovation could cost the economy dearly.[20]

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[19] Jonathan Krim, *High Tech Tension Over Illegal Uses*, WASHINGTON POST, Feb. 22, 2005, at E01.

[20] *See* Joachim Henkel and Eric von Hippel, *Welfare Implications of User Innovation*, JOURNAL OF TECHNOLOGY TRANSFER, January 2005, at 73-87.

5. Ultimately, the inadvisability of the approach advocated by Petitioners and their *amici* is well-illustrated by the assertion that the courts are just as capable of undertaking a multi-factored balancing test for new technologies as they are of undertaking such an analysis for the fair use defense. Menell/Nimmer Brief at 29. Yet Professor Nimmer himself has criticized the fair use inquiry as being unpredictable, and the individual statutory fair use factors as being amorphous and completely malleable—leaving the courts with no firm guide as to when the defense of fair use should or should not apply. Nimmer, Melville B. & David Nimmer, NIMMER ON COPYRIGHT, §13.05[A] at 13-154 (2003).[21] Creating an analogous and arguably *more* amorphous and malleable inquiry to assess dual-use technologies will create a substantial chill on innovation, equivalent to a steep tax in the amount of litigation costs plus indeterminable litigation risk.

B. *Amici* Arrow's Proposal For Imposition Of Enterprise Liability Is Flawed In Practice.

1. The inherent uncertainty in application of the proposed regulatory regime also reveals the flaw in the suggestion that enterprise liability in copyright should be extended to product design. *See Amici* Arrow Brief at 9-11. A fundamental assumption underlying imposition of liability on the enterprise is that, in 20:20 hindsight, the degree of infringing uses, costs and benefits might fairly be determined. Yet, in foresight, an actual technologist developing a product simply cannot accurately forecast all the relevant factors.

[21] Professor Nimmer has noted that the courts are left to "proceed by the seat of their pants" in resolving fair use cases, and as a consequence, it is "largely a fairy tale" to conclude that judicial application of the statutory fair use factors determines resolution of fair use cases. David Nimmer, *Fairest of Them All and Other Fairy Tales of Fair Use*, 66 LAW & CONTEMP. PROBS., 263, 280 (2003).

Product and service development is, at its core, a problem-solving process, and trial-and-error plays a prominent role therein.[22] Empirical studies of problem-solving work have shown that it is essentially impossible for product developers to get a solution right the first time. Developers only gradually come to understand the need itself, and the best solution to that need, by trial-and-error. This is why, for example, a climber can usually choose a more efficient path up a mountain the second time around. More generally, this is the reason we see a "learning curve"—knowledge and improvement accelerate over the course of repeated trials.

Therefore, when the *Amici* Arrow Brief argues that "Bars sometimes are held liable when bartenders serve alcoholic beverages to patrons who later harm others while driving drunk," the analogy is inapt. In the case of the bar owners, repeated trials *already* have occurred over time. The outcomes of these trials have been reported widely in the newspapers, generating a general awareness of the frequent link between a specific cause (drunk driving) and effect (injury) that could have been anticipated by bar owners. So, findings of indirect liability in this context may be a proper way to encourage bartenders to take care to avoid reasonably anticipatable social costs.

The situation facing developers of new communication technologies is very different. Innovators develop something to serve their non-infringing purpose, with repeated trial and error necessary to get the technology to work properly for that purpose. Innovators cannot necessarily anticipate or accurately predict the utilization of their technology by others. Moreover, many *other, independent* firms or consumers observe what the innovator has built and explore ways to build

[22] *See, e.g.* Jonathan Baron, *Thinking and Deciding* (Cambridge Univ. Press) (3rd ed. 2000); Eric von Hippel and M. Tyre, *How 'Learning by Doing' is Done: Problem Identification in Novel Process Equipment*, 24 Research Policy 1, 1-12 (1995).

around it and on top of it in order to serve their own goals. No one can predict what evolution this exploration will yield, as discrete outsiders seek to meet their own needs via trial-and-error experimentation.

Dangerously, however, in hindsight a plaintiff may be able to convince a court, for example, that "X path led to Y cost" and that such damage "clearly could have been avoided if Z pathway had been taken instead." For example, using the logic and standards presented by *Amici* Arrow, one might conclude that Sony should have been liable for unlawful librarying of home recordings of television broadcasts: In hindsight, Sony clearly could have preventing librarying by technology that deleted time-shifted recordings as they were replayed. To make each technology provider liable where hindsight later suggests means to have reduced an infringing use or suggests infringement "could reasonably have been anticipated," is to place a huge and chilling burden on these innovators.

2. Additional logical fallacies further undermine the application of enterprise liability, as proposed by *Amici* Arrow.

As a starting point, the relationship between the claimed direct infringers and Respondents is not analogous to those traditional instances in which indirect liability makes sense (*e.g.*, principal-agent, employer-employee). Respondents neither "control" the actions nor the "activity level" of the end users here. *Compare* Douglas Lichtman, *Holding Internet Service Providers Accountable*, REGULATION, Winter 2004-2005 at 54, 55-56. If anything, imposing enterprise liability on the supplier of technology is more akin to *Amicus* Lichtman's example of forcing indirect liability on a telephone company for crank phone calls where, as Lichtman acknowledges, enterprise liability is singularly *inappropriate* because "in its attempts to address the problem . . . the telephone company would inadvertently interfere with substantial legitimate telephone activity." *Id* at 56.

Moreover, as enterprise liability seeks to impose the social cost on the enterprise most able to mitigate that cost, it is far from clear that Respondents would fill that role. There are numerous other enterprises implicated in the chain of the infringing transaction. All infringing files flow through ISPs, through operating system software (generally Microsoft Windows), not to mention computer hardware. Those systems and their operators are the entities *Amicus* Lichtman suggests should bear enterprise liability in his prior writings. *See* DOUG LICHTMAN & ERIC POSNER, HOLDING INTERNET SERVICE PROVIDERS ACCOUNTABLE 41 (Univ. of Chicago John M. Olin Law & Econ., Working Paper No. 217, 2004). Thus, adjustments of those systems, which reach infringing conduct far more broadly, would need to be evaluated carefully before determining which is best situated to internalize the claimed cost of infringement.

C. The Proposed Standard Would Not Be Sufficient To Solve The Petitioners' Problem.

While the proposed new standard for secondary liability risks serious damage to the U.S. economy and technology sectors, ironically it will not solve Petitioners' problems with Internet piracy.

Specifically, if Respondents are enjoined from distributing their PtP software, foreign entities beyond the reach of U.S. Courts, but easily accessible to U.S. consumers, would continue to operate file sharing services. In December 2003, the Supreme Court of the Netherlands ruled that KaZaa BV, which created, distributed, and marketed the "supernode" model of PtP networks initially used by both Respondents, cannot be held liable for copyright infringement committed by its users.[23] Canada has opted to impose taxes on copying

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[23] *See* Joris Evers, *Dutch Supreme Court Rules KaZaa Legal*, IDG News (Dec. 19, 2003).

media such as blank CDs, while authorizing PtP swap services to continue.[24]

Thus, jettisoning *Sony* in favor of a rule designed to shut down the particular PtP technology being used by Respondents would have little if any impact on infringement. At the same time, adopting a highly unpredictable and dangerous standard would present a serious impediment to future innovation in the United States. This is therefore a case in which allowing bad facts (extensive direct infringement) to make bad law (a new chilling rule governing *all* dual-use technologies) will not even accomplish the objectives that the proposed rule purportedly targets.

That outcome would be even more regrettable given that rigorous statistical analysis does not confirm the claim that PtP file sharing actually has reduced sales of copyrighted works. In fact, the empirical results are all over the map. Findings include: increases in sales resulting from stimulation of purchases in some population segments (older consumers) that offset losses in other segments (younger users);[25] no effect;[26] or losses that are not large.[27]

For these reasons, an effective solution to Petitioners' problem cannot derive from judicial activation of a new stan-

[24] *See* John Borland, *Judge: File Sharing Legal in Canada*, Wired News (Mar. 31, 2004).

[25] Eric S. Boorstin, *Music Sales in the Age of File Sharing*, Senior Thesis, Princeton University, April 2004.

[26] Oberholzer & Strumpf, *The Effect of File Sharing on Record Sales: An Empirical Analysis*, March 2004 (concluding that "file sharing has no statistically significant effect on purchases of the average album").

[27] Alejandro Zentner, *Measuring the Effect of Online Piracy of Music Sales*, Unpublished Manuscript (Univ. of Chicago Press, 2003); Stan Liebowitz, *Will MP3 Downloads Annihilate the Record Industry? The Evidence So Far*, *in* ADVANCES IN THE STUDY OF ENTREPRENEURSHIP, INNOVATION AND ECONOMIC GROWTH (Gary Libecap ed., JAI Press, 2003).

dard. Rather, the solution can either be legislated (*see* Section II.D, *infra*) or market driven (*see* Section III, *infra*).

D. Congress, Not The Judiciary, Is The Appropriate Branch To Develop Policy for Economic Regulation Through Copyright.

Any expansion of secondary liability for copyright infringement has ramifications far beyond the entertainment and cultural/creative sectors of our economy. Such actions broadly will affect a far larger set of industries in the innovation, communications, and information technology fields. From the perspective of optimizing economic welfare as to the whole, Congress, which can act comprehensively to impact all sectors, is far better situated than the Judiciary, which decides copyright cases focused only on the impact of the copyright-dependent sector.

The Court recognized this basic principle in *Sony*, finding that "[s]ound policy, as well as history, supports . . . consistent [judicial] deference to Congress when major technological innovations alter the market for copyrighted materials." *Sony*, 464 U.S. at 431. Where the national interests in promoting technological advances and creative content seem at cross purposes, "Congress has [both] the constitutional authority and the institutional ability to accommodate fully the varied permutations of competing interests that are inevitably implicated by such new technology." *Id.*

In addition to having before them only the litigants, the courts possess only legal and equitable remedies. Congress, by contrast, possesses a full range of regulatory approaches. It has utilized such diverse approaches as statutory royalties, levies on particular types of media, proscription of particular uses for specific copying devices, immunities and safe harbors, and technological signals to restrict copying—all in an effort to balance the competing interests raised by new technologies.

As *Amici* Senators Leahy and Hatch acknowledge, if and when "Congress has perceived a need for change in the statutory law, it has done so, and without reservation."[28] In the decades since *Sony*, Congress has embarked on granular lawmaking that actively distinguishes between different technologies, different types of copyrighted works, and different uses.

For example, to address a stalemate between the content and technology industries over the introduction of digital audio recording devices to the market, Congress enacted the Audio Home Recording Act of 1992 (AHRA).[29] Similarly, to limit serial copying of television broadcasts, Congress required VCRs to conform to "automatic gain control copy control technology" and "four-line colorstripe copy control technology," while at the same time allowing broadcasters to use these anti-copying technologies only on pay-per-view or premium-subscription cable programming. 17 U.S.C. § 1201(k)(1)-(2). And as of July 2005, the FCC will impose "broadcast flag" rules for digital television programming and require that newly manufactured digital broadcast receivers be designed to protect flagged content against distribution.[30]

If, as Petitioners contend, all technologies are to be vetted through an economic regulatory analysis before being considered "copyright safe," the detailed provisions of the DMCA are additional evidence of Congress's responsibility for that task. For example, where a service provider reasonably implements a termination policy for repeat infringers and honors

[28] *See* Brief of *Amici Curiae* of United States Senator Patrick Leahy and United States Senator Orrin G. Hatch, at 11 (No. 04-480).

[29] Pub. L. No. 102-563, 106 Stat. 4240 (codified at 17 U.S.C. §§ 1001-1010). The AHRA imposed a royalty on digital audio recording devices and media, effectively spreading to consumers the anticipated costs of unauthorized copying.

[30] *See* Digital Broadcast Television Redistribution Control (Codified at 47 C.F.R. §§ 73.9000-9009 (2004)).

"standard technical measure[s]" for preventing unauthorized copying, the DMCA provides safe harbors to protect providers of Internet services from secondary liability. 17 U.S.C. § 512.[31] The Act also created a new—and highly debatable—form of "super-copyright" protection that proscribes circumvention of DRM technologies, proscriptions the courts have refused, thus far, to imbue even with Fair Use or First Amendment exceptions.[32] Conversely, the same anti-circumvention provisions contain detailed exceptions for libraries, interoperability and research. *See* 17 U.S.C. § 1201(d), (f) and (g).

Congressional enactment of statutory regulation in these contexts does not now suggest that Congress intends this Court to impose additional limits on dual-use technologies. *See Amici* Menell/Nimmer Brf. at 18-20. As one Senator commented on the DMCA, "[i]t thus should be about as clear as can be to a judge or jury that, unless otherwise specified, nothing in this legislation should be interpreted to limit manufacturers of legitimate products with substantial noninfringing uses . . . in making fundamental design decision[s] or revisions . . . "[33] Rather, these statutory enactments suggest that Congress, if anyone, should determine the need for and contours of any design limitations.

[31] Congress's protection of ISPs has particular significance here because, as the gatekeepers to the Internet, ISPs are arguably best positioned to prevent infringement. *See generally* Douglas Lichtman, *Holding Internet Service Providers Accountable*, REGULATION, Winter 2004-2005, 54 (arguing that ISPs are well positioned to regulate the vast majority of deleterious Internet behaviors). Where Congress has exempted ISPs from enterprise liability, it is Congress that likewise should determine when to expand any enterprise liability rule.

[32] *See Universal City Studios, Inc. v. Corley*, 273 F.3d 429, 2001 (2d Cir. 2001).

[33] 144 CONG. REC. S11,888 (daily ed. Oct. 8, 1998) (statement of Sen. Kohl) (discussing the conference report on the DMCA).

III. THE SOLUTION TO PETITIONERS' CONCERNS LIES IN CREATIVE LEGISLATIVE APPROACHES OR THE OPERATION OF THE FREE MARKET TO WED PTP TECHNOLOGIES TO NEW BUSINESS MODELS.

Just as the VCR ended up providing major new revenue and profit sources for media companies, so also will PtP-architected networks and technologies. To the extent that legislation were believed necessary to enable Petitioners to extract revenue from the more efficient transfer of data that PtP provides, numerous creative proposals have been suggested. Compulsory licensing schemes could extract royalty payments, as could taxes on recording media similar to Canada and Europe.[34]

More likely, however, the market naturally will evolve to incorporate PtP distribution. Indeed, new business models for the high bandwidth era already are proving successful and are undergoing rapid development and deployment in the competitive marketplace. Apple's iTunes service has to date sold more than 250 million downloads of songs.[35] Many iTunes competitors have already launched into the marketplace.[36] Paid video download and streaming services also have come online.[37]

As powerful, "large file" PtP technologies like BitTorrent continue to develop, new business models using popular PtP networks soon could become the low cost means for media

[34] William W. Fisher, *An Alternative Compensation System, in* TECHNOLOGY, LAW, AND THE FUTURE OF ENTERTAINMENT (Stanford Univ. Press, 2004) (proposing a compulsory licensing scheme for PtP networks).

[35] *See* Peter Cohen, *iTunes Music Store Tops 250 Million Songs Sold*, MacWorld.com (Jan. 24, 2005).

[36] *See generally* Walter S. Mossburg, *The Mossburg Solution*, WALL STREET JOURNAL, Feb. 23, 2005 at D4.

[37] *See generally* www.movielink.com; www.cinemanow.com.

companies themselves to distribute copyrighted video content to mass consumer markets—free of the hefty distribution fees these companies must now pay to TV broadcasters, cable and satellite on-demand systems or video rental stores.

These current and future business models represent a marriage of PtP-architecture with rapidly emerging DRM technologies. DRM refers to technologies that are embedded in digital files to protect copyrighted material from piracy or other unwanted usage, including such methodologies as watermarks and encryption. DRM technologies are undergoing extremely rapid development and deployment into the marketplace, through the efforts of both technology companies and media companies, often acting together in joint ventures or standard-setting consortia that will apply across technology platforms.[38]

When content embedded with DRM is circulated over a PtP network, the network's basic distribution methods and protocols remain unchanged, preserving the networks' intrinsic advantages of bandwidth conservation, and scalability. Once delivered to the user, DRM technologies impose limits on use, permitting the copyright owner to micro-control who can access the copyrighted content, when, for how long, with what copying and onward distribution rights and at what

[38] Sony, Phillips and others bought Intertrust Technologies, an early patenter of many DRM technologies in 2003, and in 2004 non-exclusively licensed these patents to Microsoft for an upfront payment of $440 million. *See* Press Release, *Microsoft and Intertrust Settle Outstanding Litigation and License Intellectual Property* (Apr. 12, 2004), available at http://www.intertrust.com/. Microsoft has announced its plans to include DRM tools in many of its future products and in new releases of extant products. *Id.* In early 2005, Intertrust, Matsushita, Phillips, Samsung, and Sony formed the Marlin Joint Development Association to develop a comprehensive DRM suitable for any consumer device and to compete with the DRM products of Microsoft and Apple. *See* John Borland, *Home Electronics Giants Launch Antipiracy Strategy*, CNet News.com (Jan. 19, 2005).

price(s). *See* Dan Simmons, *Peer to Peer Goes Legitimate*, BBC Click Online (Dec. 17, 2004) (reporting that the BBC will offer play-duration limited versions of most of its TV programs into widely used PtP file sharing networks on the open Internet during 2005).

Indeed, both a recent Cato Institute report[39] and a recent report by the Committee for Economic Development, a group of 250 business leaders across all industry sectors, have urged development of new business models as the solution to digi tal piracy.[40] The CED report recommends to first, "do no harm"—referring to the danger of expansion of copyright as a limitation to technological development. *Id.* at 2. "The most important efforts the content industry can make are those directed towards the development and testing of new business models for the distribution of creative content . . . [T]he perfect storm threatens not creative activity but commercial models for its distribution." *Id.* at 46.

It will be up to the competitive marketplace to assess and winnow the many online business models that can evolve from PtP technologies, rewarding the most appealing and convenient. The federal courts need not and should not usurp this essential marketplace role.

CONCLUSION

We accordingly urge this Court to re-affirm the full vitality of the *Sony* principle in deciding this important case.

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[39] Michael A. Einhorn and Bill Rosenblatt, *Peer-to-Peer Networking and Digital Rights Management: How Market Tools Can Solve Copyright Problems*, Cato Institute, Policy Analysis No. 534 (2005).

[40] *See* DIGITAL CONNECTIONS COUNCIL, COMM. FOR ECON. DEV., PROMOTING INNOVATION AND ECONOMIC GROWTH: THE SPECIAL PROBLEM OF DIGITAL INTELLECTUAL PROPERTY (2004), *at* http://ced.org/docs/report/report_dcc.pdf.

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